A bilateral gynandromorph of *Periga falcata* (Walker 1855) (Lepidoptera: Saturniidae: Hemileucinae)

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NOTE

A bilateral gynandromorph of *Periga falcata* (Walker 1855) (Lepidoptera: Saturniidae: Hemileucinae)

Gynandromorphs are aberrant individuals with both male and female characters. They are exceedingly rare phenomenon in nature. They may arise by different genetic mechanisms (Rieger et al. 1991), but the frequency with which they are recognized is mainly related to the degree of sexual dimorphism of each species (De Prins and Saitoh 2003).

In butterflies and moths, the female is the heterogametic sex with a Z-chromosome, which may be paired or unpaired with a W-chromosome. The male possesses a pair of identical Z-chromosomes. Thus, only one kind of sperm is produced during spermatogenesis. The genetic determination of lepidopteran sex is made at fertilization according to the chromosomal constitution of the eggs, which can be of two types: ZW females produce eggs bearing a Z- or a W-chromosome, while ZO females yield eggs bearing a Z- or a O-chromosome. At fertilization, the following combinations of sperm and egg are possible: Z-sperm/Z-egg, Z-sperm/W-egg, and Z-sperm/O-egg. The fertilized Z-eggs give rise to male zygotes (ZZ), while both of the fertilized W- and O-eggs will give rise to females zygotes (ZW and ZO) (see also De Prins and Saitoh 2003).

Gynandromorphs are relatively well known in Lepidoptera, but are little documented for a number of families (Nekrutenko 1965). They may be bilaterally differentiated, with one side of the body male and the other female. The bilateral gynandromorphs are produced either by a loss of a Z-chromosome in the first cell division of the fertilized egg or via development of a binucleate ovum. If such anomaly occurs at the later stages of cell division, the gynandromorph will have a mosaic of male and female characters.

We here report an incomplete bilateral gynandromorph of *Periga falcata* (Walker 1855) collected in January 1960 in Rio Vermelho, a village in the municipality of São Bento do Sul, State of Santa Catarina, southern Brazil (26°14′59″S, 49°22′57″W, 873 m a.s.l.). The objective of this note is to present a brief description of the specimen deposited in the Lepidoptera Collection of the Museu de Zoologia da Universidade de São Paulo, Brazil, under the serial number MZSP 02875. Three males (MZSP 02841, MZSP 02845, MZSP 02846) and three females (MZSP 02863, MZSP 02864, MZSP 02867) of *P. falcata* collected at the same locality were examined carefully to determine if any character of the gynandromorphous specimen presented intermediacy or a significant difference or extreme for the respective sex.

The gynandromorph is here identified as belonging to the genus *Periga* Walker based on structure of antenna and wing shape and markings (Lemaire 1973, 2002a, 2002b). It is easily recognized as *P. falcata* (Walker) by the falcate shape of the female forewing on the right half (Fig. 1). The known females of the other species considered in the species-group *Periga circumstans* (*sensu* Lemaire 2002a), in which *P. falcata* is placed, lack falcate forewings (illustrations in Lemaire 1973: 815, figs. 3, 5, 7; 2002b: plate 3, fig. 8).

The description is as follows: *Head*: Antennae bipectinate as in normal males and typical of the genus (Lemaire 2002a:

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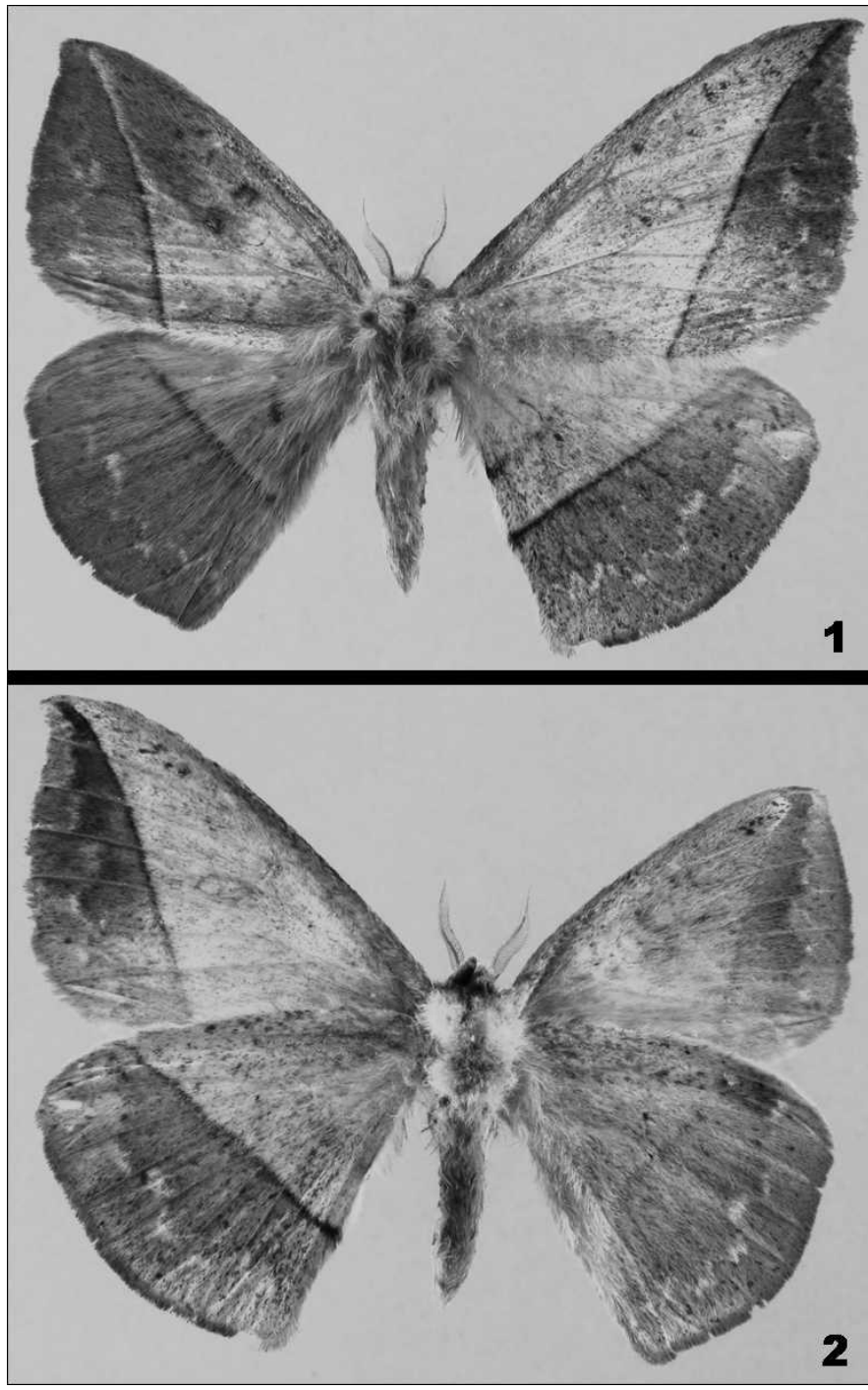

Figs. 1–2. Gynandromorph of *Periga falcata*. 1, Dorsal view (left, male; right, female). 2, Ventral view (left, female; right, male). Scale bar = 10 mm.

Table 1. Wing measurements (mm) of the gynandromorph and other specimens of *Periga falcata* collected in Rio Vermelho, municipality of São Bento do Sul, state of Santa Catarina, Brazil.

Wing characters	Normal Males (n=3)	Normal Females (n=3)	Gynandromorph (male half)	Gynandromorph (female half)
Costal margin length (base to apex)	30.13 ± 0.83	39.46 ± 0.79	29.62	36.63
Outer margin length (apex to end of vein 2A)	18.47 ± 0.15	24.87 ± 1.63	19.47	23.70
Inner margin length (base to end of vein 2A)	21.85 ± 1.07	26.03 ± 2.15	20.61	24.68
Forewing width (costal margin at mid point to end of vein 2A)	17.01 ± 0.05	21.10 ± 1.31	17.09	19.92

44). Left antenna 7.11 mm long; right antenna 7.02 mm long (in normal male individuals average length of right antenna 6.92 mm ± 0.74 mm; n=3). Labial palpi with sexual dimorphism in size and scale vestiture; left palpus typical of male, well developed, covered by long and rough scales; right palpus typical of female, smaller and with smooth scales. *Thorax*: Dorsum symmetrically divided in length, with pale brown scaling on the right half and yellowish brown scaling on the left (Fig. 1), corresponding to the pattern usually found in typical female and male individuals, respectively; scale vestiture homogenous light brown ventrally; wing pattern of the left half (Fig. 2) as described and illustrated in Lemaire (1973, 2002a, 2002b), resembling the female phenotype of *P. falcata*; wing pattern of the right half (Fig. 2) differing from the male phenotype of *P. falcata* illustrated by Lemaire (1973, 2002b). All wing measurements are comparable with typical specimens collected at the same locality (see Table 1). All legs of the gynandromorph are broken. *Abdomen*: Dorsum symmetrically divided longitudinally, as in thorax; scale vestiture dirty brown ventrally. Genitalia not dissected.

This is the second report of gynandromorphism in the genus *Periga* Walker. A complete bilateral gynandromorph was described for *P. circumstans* Walker, 1855 (Moraes 2005). Besides showing sexual dimorphism in the antennae, which is not observed in the gynandromorph of *P. falcata*, the gynandromorph of *P. circumstans* also differs in having the female phenotype on the left and the male phenotype on the right. Moraes (2005) also observed defective structures in the genitalia.

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